UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

OFFICE OF RESEARCH AND DEVELOPMENT
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604

MEMORANDUM

SUBJECT: Screening Level Ecological Risk Assessment Report Review
Appendix M to Remedial Investigation Report
East Troy Contaminated Aquifer Site
East Troy, OH

FROM: Charles G Maurice, PhD, Superfund & Technology Liaison
Office of Science Policy
Office of Research and Development

TO: Shari Kolak, Remedial Project Manager
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DATE: September 30, 2014

GENERAL COMMENT

As evidenced by the below 27 specific comments, this Screening Level Ecological Risk Assessment (SLERA) Report has several shortcomings and inconsistencies. Despite these troublesome weaknesses, the general approach adequately followed EPA guidance and a considerable, although not definitive, case was made for a Baseline Ecological Risk Assessment (BERA) likely not being needed. A more compelling case for dismissing the need for a BERA would be desirable. This could be accomplished by attending to the specific comments. The most crucial improvement to the SLERA architecture would come from developing a more appropriate conceptual site model. Likely the most important substantive improvement would be to provide a more expansive and credible case for dismissing the presence of state and federal listed species in the site vicinity.

SPECIFIC COMMENTS

Section 3.1.1, Paragraph 1:

1. A brief description (perhaps only a couple of sentences) of the "*only potential terrestrial ecological habitat near the GMR* [Great Miami River]" would be appropriate here in the **Ecological Habitat Characterization** subsection.
2. Because there does not appear to be any other mention of the potential terrestrial ecological habitat in the SLERA, it also seems appropriate to provide 1-2 sentences stating the rationale for not addressing it any further.

Section 3.1.1, Paragraph 4:

3. It seems relevant and appropriate to state that "*the free-flowing section of the GMR downstream of the Troy lowhead dam*" identified by the Ohio EPA as EWH includes the GMR reach included within the East Troy Contaminated Aquifer (ETCA) Site boundary.
4. Due to its descriptive relevance and significance, it seems appropriate to call out the EWH classification as "Exceptional Warm Water Habitat".

Section 3.1.1, Paragraph 5:

5. The second sentence incorrectly states: "*According to the NWI database, no wetlands are present on the site.*" If one superimposes the site boundary from **Figure 1-2: Site Layout**, it is clear a rather large freshwater pond lying just north of the golf course is almost completely within the site boundary.
6. It is unclear why the plume footprint rather than the normally applied site boundary is used for this discussion. Relatedly, the site boundary should be drawn onto **Figure 3-1: National Wetlands Inventory Sites** and perhaps also onto **Figure 1-5: Monitoring Well Locations and Figure 1-9: Surface Water and Sediment Sampling Locations.**
7. One can distinctly see from **Figure 3-1: National Wetlands Inventory Sites**, the freshwater pond is part of a classic remnant oxbow of the GMR. I am not suggesting it to be the target of further investigation but from an ecologic perspective, absence of noting its onsite existence and relationship with the river and oxbow ecosystems is an oversight. Particularly in the Ecological Habitat Characterization, additional text should be inserted recognizing and briefly describing this potentially ecologically significant occurrence which also includes freshwater emergent wetland and freshwater forest/shrub wetland.
8. Corresponding to recognition of the onsite freshwater pond and the adjacent remnant oxbow ecosystem, a brief rationale also needs to be provided (either here or elsewhere) for not preliminarily assessing risks to this potentially significant ecologic complex, despite a portion of it being located within the site boundary.

Section 3.1.1, Paragraphs 6-8, embedded table, and **Attachment M-4**:

9. The statement indicating the occurrence of 17 plant and 7 animal state and federally listed species in Miami County seems to disagree with the information provided in **Attachment M-4: Ohio County Distribution of Federally-Listed Threatened, Endangered, Proposed, and Candidate Species**. **Attachment M-4** does indicate 17 plant and 7 animal species listed by the state for Miami County; however, it also indicates 4 animal species listed by the federal government for Miami County. Three of these 4 federally listed animal species are not included on the state list for Miami County. Thus it would seem that there are 10 state and federally listed species for Miami County. Please review the information and reconcile the mathematics.
10. Collectively, the inconsistencies in these 3 paragraphs combined with the terrestrial habitat description or characterization absence identified previously, do not instill much confidence in the rationalizations provided to eliminate listed species from further consideration. In addition to the suggestions already indicated, I further recommend development of a more robust rationale for discounting the presence of the state and federal plant and animal species listed for Miami County. Such a rationale could be supported by a) improved consistency; b) more reasoned and structured evaluation perhaps largely accomplished via a table; and c) for the remaining few species which cannot be reasonably eliminated from consideration, contacting the state and federal authorities responsible for protecting these species from endangerment and asking about the likelihood of those species being present at the site.

11. The table option suggested in 10. b above could be similar to the table currently appearing immediately after paragraphs 6-8 in the document, except including all of the listed species for Miami County and having an additional column in which species required habitat is compared with habitat occurring at the site. This table could replace the current contents of **Attachment M-4**. (See comment 15 below.)
12. No rationale for screening out the Mississippi silvery minnow was provided, unlike that provided for the other 3 listed aquatic species discussed with it.
13. From the information provided, it seems possible that the least darter could potentially find appropriate habitat in the previously mentioned freshwater pond located on site north of the golf course.
14. The last 2 sentences of paragraph 8 seem to contradict each other regarding the snuffbox clam preference for swift current and its unlikely presence due to the swift current.
15. The relevance of information in **Attachment M-4** (more than 20 pages) about federally listed species occurring in Ohio counties other than Miami County is unclear. **Attachment M-4** should be replaced by relevant listed species information for Miami County such as suggested above in comment 11 or it should be eliminated.
16. The duplicate page of state-listed species for Miami County needs to be removed.

Section 3.1.2, Paragraph 2:

17. The freshwater pond north of the golf course is within the site boundary so the GMR is not the only aquatic habitat on the site.
18. I was unable to find the indicated onsite forested wetland area on **Figure 3-1: National Wetland Inventory Sites**.

Figure 1-4: Ecological Conceptual Site Model:

19. The diagram does not seem to match the ETCA Site and therefore must be redrawn. The most prominent inconsistency is depiction of contaminant transfer via bioaccumulation in the food chain. Since the contaminants of potential ecological concern (COPECs) are volatile organic compounds (VOCs) which typically have very low potentials to bioaccumulate, food chain transfer is not being considered.

Section 3.1.2.1, Paragraph 3:

20. Is the implication that virtually all of the site related contaminant plume is being pulled under the river and then captured by the Troy drinking water (DW) production wells? If so, please state this for clarity stating the situation. If not so, please describe the presumed situation, including the fate of the contaminants.

Section 3.1.2.1, Paragraph 4:

21. Please clarify the apparent contradiction between this paragraph which sets the focus of the complete pathways discussion on contaminated groundwater moving through the GMR sediments to the surface water and the preceding paragraph which states that the GMR is a "*losing stream and recharges the aquifer due to the pumping influence of the well field.*" There are several possibilities for explaining potential GMR contamination despite the current modeled results. Not knowing your thoughts, some possible explanations might include that you are addressing a) anticipated periods of intended or unintended pump shutdown or altered pumping rates; b) potential uncertainty in the modeled contaminant plume migration projections; or c) anticipated changes in local hydrologic conditions independent of pump production such as those due to seasonal or long-term climatic variations or projected climate changes.

Section 3.1.2.1, Paragraph 7:

22. This paragraph indicates 2 GMR surface water (SW) and sediment (SD) locations were used; however, **Figure: 1-9 Surface Water and Sediment Sample Locations** shows 4 site-related SW/SD sample co-locations downstream from the spillway and 1 SW/SD sample co-location immediately upstream of the spillway, and indicates 1 presumably reference SW/SD sample co-location 3000 ft upstream. Please reconcile the text with the figure.

Section 3.1.2.2, Paragraph 5:

23. The second of the 2 stated SLERA assessment endpoints addresses state and federally listed species; however, listed species are not mentioned again in the SLERA. This situation needs to be reconciled.

Section 3.2.2, Paragraph 3

24. The geochemical parameters and essential nutrients excluded from evaluation need to be identified and an explanation of the rationale used for their exclusion needs to be provided. Given that "the dose makes the poison" even essential nutrients become toxic at some elevated level. A big discussion is not needed here, but a broad, sweeping statement/decision was made without any explanation, justification, or rationale.

Section 3.2.2.1, Paragraph 1

25. See comment 22 regarding the number of co-located SW/SD sampling sites.

Section 3.2.3.1, Paragraph 1

26. Conceptual Site Model uncertainties arising from possible inconsistent pump operation and changes in water demand/availability over time should be included.

Section 3.3, Paragraph 3

27. Brief mention "*that maximum detected* [site groundwater contamination] *concentrations of several constituents (VOCs) exceeded their ESVs* [ecological screening values]" is made here at the end of the SLERA, i.e., in the SLERA summary and 4th to last paragraph of the SLERA. These site contamination ecotoxicity results need to be addressed far earlier and more expansively.

Cc: M. Lavay, ORD/OSP
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